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SUBJECT: OIL SHALE ENERGY: FACING ENVIRONMENTAL CHALLENGES AND LOOKING TOWARDS THE FUTURE

¶1. (U) Summary. Oil shale is a key Estonian national resource, whose existence has allowed the country to remain relatively independent of Russian natural gas supplies. Despite the high cost of compliance, the GOE and power utility Eesti Energia are confident they will bring Estonia's oil shale fired power plants into compliance with EU environmental directives affecting ash landfills and air emissions by mandated deadlines. Environmental activists are concerned, however, that Eesti Energia may delay the forward-looking upgrades until the last minute in order to maximize output in the short term. A Ministry of Environment Committee is currently reviewing a draft Development Plan that will serve as the basis for a new National Strategy for Oil Shale. End Summary.

OIL SHALE USAGE IN ESTONIA

¶2. (U) For decades, Estonia's energy sector has been the country's single biggest consumer of water and mineral resources and the biggest producer of waste. Combustion of fossil fuels (oil shale, heavy fuel oil, and natural gas) to generate electricity and heat accounts for a large percentage of the solid particles and greenhouse gases emitted into Estonia's air. The majority of these emissions are due specifically to the burning of oil shale. GOE-owned Eesti Energia, the supplier of approximately 95% of Estonia's electricity demand, owns the largest oil shale based power plants in the world. Three of its four power plants produce electricity by burning oil shale: Eesti Power Plant, Balti Power Plant, and Kohtla-Jarve/Ahtme Power Plant. These plants are located in the northeastern oil shale producing region of Estonia. (Note. Eesti Energia's fourth plant, Iru Power Plant, is a small combined heat and power plant located in Tallinn and fueled by natural gas and liquid fuels. End Note.)

¶3. (U) There is considerable debate as to the quantity of useable oil shale in Estonia. The most optimistic estimates put Estonia's oil shale reserves at seven Gigatons, an amount that would last for approximately 100 years at current usage rates. However, more conservative industry estimates predict that reserves of high quality, easily accessible oil shale will only last for another 15 years. The deeper the oil shale is located, the more difficult it is to mine and the lower the quality.

EU ENVIRONMENTAL DIRECTIVES: MEETING THE CHALLENGE

¶4. (U) When Estonia joined the EU in 2004, the country agreed to comply with certain environmental restrictions to be phased in over the course of several years. For example, EU Directive 1999/3/EC restricts hydro transportation (mixing oil shale ash - a bi-product of combustion - with water and pumping it into a landfill). The low-grade composition of Estonian oil shale results in large amounts of waste ash after it is burned. Traditionally, this ash was disposed of in the manner now specifically prohibited by the EU regulation. The EU and Estonia have agreed on a transitional period for implementation of EU 1999/3/EC until July 16, 2009. In addition, EU Directive 2001/80/EC requires that large combustion plants reduce sulfur dioxide and solid particle emissions. The EU and Estonia agreed to phase in emissions reductions by December 31, 2015.

¶5. (U) Eesti Energia estimates that EU compliance (including EU landfill and air pollution directives and the cost to clean up past pollution) will ultimately cost the company approximately USD $2 billion. According to Mati Uus, Development Manager for Eesti Energia, Estonia's compliance with EU environmental regulations is on track and the deadlines will be met. In addition, Heido Vitsur, Economic Advisor to the Minister of Economy and Communication, confirms that the GOE is ready to upgrade its oil shale plants to meet the EU's environmental standards. Specifically, Eesti Energia plans to reduce air emissions by rQlacing old high pressure pulverized firing boilers with more efficient circulating fluidized bed boilers. Eesti Energia also plans to install sulfur dioxide and nitrogen dioxide "scrubbers" on smoke stacks to further reduce emissions. Additionally, the company intends to replace existing oil shale ash hydro transport systems with more environmentally friendly methods including trucking dry ash to better insulated landfills.

By 2007, two old ash landfills will be closed and bQ2013 existing ash storage sites will be renovated to prevent leaching. (Note. For the past 45 years a private company, AS Silbet, has used waste oil shale ash to produce construction materials, including concrete. In August, the company opened a second production line to increase output. While it is encouraging to see some waste ash being turned into useful products, due to the sheer volume of ash being generated it is not an overarching solution to the landfill problem. End Note.)

TIMING ENVIRONMENTAL UPGRADES

¶6. (U) There is concern among domestic environmental organizations and others that Estonia's interest in increasing electricity exports could delay planned environmental upgrades. The GOE currently exports electricity to Latvia and Lithuania. This month Estlink, an undersea electricity cable to Finland, will come online. Valdur Lahtvee, former Environmental Manager of Eesti Energia and current Director of the Sustainable Development Institute, expressed concern that the GOE's interest in producing a maximum amount of energy for export could result in a delay in replacing old, polluting boilers. In order to maximize production, Eesti Energia might opt to completely exhaust the old boilers and wait to make upgrades until just before the EU compliance deadline. Additionally, Eesti Energia may delay replacing old boilers if studies indicate future oil shale reserves are indeed inaccessible or of poor quality. Importing energy via Estlink may ultimately prove more economically sound than continuing to mine an inefficient resource. Thus, while some environmental upgrades have already taken place in accordance with EU environmental directives, Eesti Energia has significant incentive to take a "wait and see" approach before making further investments.

DETERMINING THE FUTURE OF ESTONIAN OIL SHALE

¶7. (U) Last summer, the Ministry of Environment (MOE) formed a 5-member Working Group (WG) to determine the best

and most sustainable strategies for oil shale mining and power production. The WG was comprised of members from the National Science Academy, the Ministry of Education and Research, Tallinn University, a former director of Eesti Energia power plants, and Lahtvee as a representative of Estonia's Green NGOs. The MOE tasked the WG with drafting an oil shale Development Plan, including a Strategic Environmental Impact Assessment and an Implementation Plan. The WG submitted a draft Development Plan to the MOE in late October. The draft concludes that current rates of oil shale mining are sufficient to cover Estonia's needs for electricity, heat, and moderate oil production through the year 2015. After 2015, the draft recommends that mining capacity decrease and the use of renewable energy increase. Further, the draft Development Plan calls for new mining licenses to be issued only to those companies that implement environmentally friendly technologies and have projects to improve the environment in mining areas.

¶8. (U) The draft Development Plan is currently being evaluated by a MOE-appointed 17-member Committee that will simultaneously deal with the economic, security, social, and environmental aspects of oil shale utilization. This is a first for the GOE, as previous oil shale studies were primarily focused only on economics. A round-table comprised of MOE-appointed stakeholders from local governments, civic groups, and the general public will also review the draft Development Plan and offer opinions. By May 1, 2007, the MOE Committee must complete its review of the draft Development Plan and submit a draft National Strategy for Oil Shale to the Cabinet. The various political parties and interests in the Cabinet will ultimately determine whether a final National Strategy for Oil Shale bill is submitted to Parliament for approval.

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